LTS Science and Technology Roadmap
Roadmap Writing Workshop
Denver Marriott City Center Hotel, Denver, CO
May 13-15, 2002

A Roadmap Writing Workshop for the LTS Science and Technology Roadmap was held on May 13-15, 2002, at the Denver Marriott City Center Hotel in Denver, CO. The meeting had the following objective:

- By Wednesday [May 15] afternoon, complete a draft, formatted/integrated LTS S&T Roadmap (charts and report).

Summary proceedings of the three-day meeting appear below.

Action Items

#	Action Item	Designee
1	Go back to our management to clarify this roadmap. We need a higher-order policy clarification and top-down policy management agreement. (Clear policy requirements and management directions are missing.)	Bruce Hallbert
2	Send Steve Wassersug the STS Stakeholder Meeting Schedule.	Lori Braase – Complete
3	Serve as the POC for the chapters/documentation. Send documents to Bob Katt and put them on the website.	Doug Hamelin – Ongoing
4	Use the "track changes" feature to edit documents and forward all comments to Doug Hamelin. Send chapters as soon as they are complete.	BOD/EC – Ongoing

Issues/Concerns

- When will the work groups have time to talk to each other?
- The LTS colored timeline (from Brent Dixon) does not reflect the thinking of the workgroups. It would be helpful to hear what other groups are doing.
- Feedback loops are not represented in the LTS Timeline
- We need to discuss how much impact this LTS Roadmap can have on closure.
- How do we crosswalk our report to other efforts (applicable to our work)?
- Who delivers the deliverable (LTS Roadmap) to avoid conflict of interest? BBWI? FACA?

Attendees

Board of Directors

E. Larry Davis (EC Chair), BWXT Savannah River Company
George Apostolakis, Massachusetts Institute of Technology (Day 2 and 3 Only)
J. Lane Butler, Kaiser-Hill Company, LLC
Lorne G. Everett, The IT Group
Shah Choudhury, DOD Environmental Cleanup
Howard Roitman, Colorado Department of Public Health and Environment (Day 1 Morning Only)
Clay Nichols, DOE-Idaho Operations Office
Bruce Hallbert, INEEL Roadmapping Project Manager (Day 1 and 2 Only)

Steering Committee / Working Groups Chairs

David J. Borns, Sandia National Laboratories – Monitoring and Sensors
James H. Clarke, Vanderbilt University – Contamination Containment and Controls
William R. Freudenburg, University of Wisconsin-Madison – Decision Making and Institutional Performance
James V. Mohatt, JVM and Associates – Safety Systems and Institutional Controls

Working Group Members

Margaret MacDonell, Argonne National Laboratory – Contamination Containment and Controls
Ellen D. Smith, Oak Ridge National Laboratory – Contamination Containment and Controls
W. Jody Waugh, MACTEC-ERS – Contamination Containment and Controls
Lee "Chip" Clarke, Rutgers University – Decision Making and Institutional Performance
Norman Brandon, Creative Concepts – Safety Systems and Institutional Controls
David French, Aspen Resources – Safety Systems and Institutional Controls

DOE and Other Attendees

Jerry Harbour, Idaho National Engineering and Environmental Laboratory
Kevin Kostelnik, Guest Speaker, Idaho National Engineering and Environmental Laboratory
Gretchen Matthern, Idaho National Engineering and Environmental Laboratory
Chuck Powers, Consortium for Risk Evaluation with Stakeholder Participation (CRESP) II
Karen, Schaepe, University of Wisconsin Graduate Student
Jeffrey J. Short, U.S. Department of Energy Office of Environmental Management
Steve Wassersug, Global Environmental & Technology Foundation
C. Brooks Weingartner, U.S. Department of Energy Idaho Operations Office
Bob Wilson, Guest Speaker, U.S. Department of Interior

Facilitation / Technical Support Team

Robert Katt, Robert Katt and Associates
Bryan L. Parker, Facilitator, Idaho National Engineering and Environmental Laboratory
R. Douglas Hamelin, Technical Support, Idaho National Engineering and Environmental Laboratory
Lori Braase, Technical Support, Idaho National Engineering and Environmental Laboratory
Steven J. Kowall, Idaho National Engineering and Environmental Laboratory
Brent Dixon, Idaho National Engineering and Environmental Laboratory

Meeting Agenda

Monday, May 13

7:30 – 8:00	Coffee in large meeting room	
8:00 – 8:15	Meeting objectives, overview, roles, introductions & "flow" What we expect to have at noon Wednesday	B. Parker
8:15 – 10:00	Status	
	▪ LTS Fact sheets & briefing material	B. Hallbert
	▪ Stakeholder meetings & future involvement	B. Hallbert
	▪ Review/update of work group results	Work Group Chairs
	▪ Status briefing on Early Draft Roadmap	B. Kaat
	The Report	S. Kowall / B. Katt
	▪ Audience	
	▪ Purpose/Thesis	
	▪ Format & Etc.	
10:00 – 10:30	Break	
10:30 – 12:00	Review & identify "integrations" on draft wall chart Overview of chart Identify & group common activities Discuss timeline Extract themes Clarify priorities (may need to revisit later)	B. Dixon / B. Parker
12:00 – 1:30	Lunch (Provided, with Guest Speaker)	
1:30 – 3:00	Discuss and develop general themes for the Roadmap report and each of its chapters	All
3:00 – 3:30	Break	
3:30 – 4:00	Revisit & refine main report outline & clarify themes	All
4:00 – 4:30	Outline front & back report sections (Introduction, summary, & positioning material)	All
4:30 – 5:00	Identify writing groups & assignments / Explain process for maintaining document continuity	All

Tuesday, May 14

7:30 – 8:00	Coffee in large meeting room	
8:00 – 8:30	Plan of the Day (large meeting room)	All
8:30 –12:00	Writing in groups (breaks as needed)	All as assigned
12:00 – 1:15	Lunch provided in large meeting room (Guest Speaker)	

1:15 – 1:45	Status check & Q&A	All
1:45 – 5:00	Writing in groups (breaks as needed) (Turn in writing assignments at end of day for copying)	All as assigned

Wednesday, May 15

7:30 – 8:00	Coffee in large meeting room	
8:00 – 8:30	Status writing assignments—copies distributed in large meeting room	All
8:30 – 10:00	Review, merge, & identify gaps and etc. (large meeting room)	All
10:00 – 10:30	Break	
10:30 – 12:00	Path forward, timeline, & assignments to complete ▪ reviews ▪ briefings ▪ future communications and meetings	All
12:00	Most attendees dismissed	
12:00 – 1:30	Lunch for core writing group (On your own)	
1:30 – 5:00	Continue consolidation of report	Core Writing Group

Day One – May 13, 2002

The following information was captured during discussions held throughout the Denver LTS Roadmap meeting.

Meeting Objectives and Overview

Bryan Parker

Objective: By COB on Wednesday, complete a draft, formatted/integrated roadmap (charts and report).

- This meeting is all about the details.
- We will be starting general and moving to the specifics of the roadmap design.
- The only meeting process guideline to monitor *your* behavior based on the agenda. Keep moving forward and we will capture your issues and actions to resolve later.

Overview of LTS Roadmap Effort, LTS Fact Sheets, and Briefing Material

Bruce Hallbert

- There have been several directional changes that have impacted the LTS Roadmap development.
  - DOE's Top-To-Bottom Review (caused LTS realignment.)
  - Security issues.
  - Headquarter's effort to establish goals and develop vision.

- The LTS Roadmap was intended as a formal planning document to identify where we want to go.

- We have developed capabilities to reduce costs and vulnerabilities.

- During the Orlando meeting, we had to realign to DOE's Top-To-Bottom review.
  - We addressed those issues we felt were reoccurring.
  - The technology pathways were developed.

- LTS Fact Sheets were developed, reviewed, and approved for release and dissemination.
  - These materials have been handed out and are available for meetings and presentations to inform audiences of the direction of the LTS Roadmap.
  - Good way to establish liaisons with important organizations to LTS.

- We need to also send out an updated progress report.

Stakeholder Meetings and Future Involvement

Bruce Hallbert

- There is a growing awareness of the need for cross-agency coordination.
  - There is a dominant roll in the cross-agencies.
  - We are requirements driven in this process, but we have a key role to be responsive to inter-agencies.

- Need to put the decision making process with the cross agencies into a hierarchy to show site's paths forward.

- The best things will come out of this for our country if we can implement some of these ideas.
  - Steve Wassersug is looking on our behalf to look for opportunities from other agencies. He will ensure that appropriate credit is given, the audience is appropriately identified, opportunities are captured for the LTS Roadmap, missing stakeholders are identified, and presentations are scheduled.
  - Let Steve know about these meetings and Steve will champion our ideas.
  - We have flyers and power point presentations for your use to present.
  - Missing the Academic Sector and Private Sector
  - Please let Steve know (via email) if you have additional items (**steve.wassersug@getf.org)**.

Discussion:

- There is no unanimity of understanding of what a roadmap is, even among us.

- As we interact with each other, please ask questions if you need clarification regarding the roadmap process.

- We need unanimity of agreement as to the techniques behind this deliverable.

- Importance of getting stakeholders on board is evident (see applicable Consortium for Risk Evaluation with Stakeholder Participation (CRESP) report out of Hanford - ***www.cresp.org***)
  - We are all grounded in values that could be the basis of unanimity of agreement.
  - Keep the stakeholders in mind.

- "Neutralize" the stakeholders by communicating to them to engender trust, so the stakeholders understand the science. We are pursuing noble values and they need to see that.

- It is important to reach out to the agencies.

#	Been Held-LTS Discussed	Mtg planned – LTS on Agenda	Mtg Scheduled – LTS not on Agenda	Tentative mtg-no date. LTS s/b discussed	Title/Stakeholder(s)	LTS Contact	Date Held or Scheduled
1				**X**	National Academy Committee Stewardship (Phase III)	Jim Clark	?
2			**X**		SSAB Stewardship Team Oak Ridge	Ellen Smith	Monthly
3		**X**			World Federation of Scientists – Italy Briefing of LTS to be presented	Lorne Everett	8/19/02
4	**X**				ECOS Multi-Agency Workshop (DOE,DOI, EPA, NSA, ATSWMO, Tribal, States)	Howard Roitman	4/9-10/02
5	**X**				ECOS Spring Meeting (States and Federal Agencies)	Howard Roitman	4/24/02
6				**X**	ECOS Expanded Multi-Agency Workshop (States, Federal Agencies, plus GSA, NRC, USDA)	Howard Roitman	June 02
7		**X**			ECOS Annual Meeting (States, Federal Agencies, Private Sector)	Howard Roitman	10/6-8/02
8				**X**	IRTC (State technologists/managers)	Howard Roitman	?
9	**X**				SERDP Cleanup Project Review (DOD)	Jeff Short	5/2/02
10		**X**			SPECTRUM 2002 - American Nuclear Society (all stakeholders)	Kevin Kostelnik/ Jeff Short	8/4-8/02
11		**X**			EPA Federal Facility Leadership Council (EPA management/Regions/HQ)	Jeff Short	6/26/02
12			**X**		DOI Conference on the Environment	Bob Wilson	5/2003
13					DOI Main Building Display Case (public)	Bob Wilson	Ongoing
14	**X**				IMLUCC Interagency Military Land Use Coordination Committee (DOD, DOI, DOE, USDA, GSA)	Shah Choudhury	5/2002
15		**X**			Vadose Zone – LTS Roadmap N.W. Science Forum (States, EPA, DOE, DOI, Management/Scientists)	Steve Kowall/ Brooks Weingartner	7/2002
16				**X**	Energy Community Alliance (ECA) (local communities)	Steve Wassersug	TBD
17		**X**			World Federation of Scientists Workshop Full international workshop planned and funded by World Fed	Lorne Everett	8/26/03
18			**X**		ITRC RadTeam June Meeting	Gretchen Matthern	6/13/02
19			**X**		ASME Conference	Gretchen Matthern	9/02

Review/Update of Work Group Results

Work Group Chairs

Jim Clark:

- Isolation for stewardship and cost savings.
- Most R&D is focused on *Will it work?* and *What are its limitations?* and *What does it cost?*
- What do we have to do to keep it working? Frequency? Cost?
- We need analytical tools to develop indicators of potential failures.
- The better we can forecast the long-term behavior, the better decisions we can make.
- Bottom line – don't fight Mother Nature. Look forward, fund, and foster those processes that mimic nature and have flexibility to adapt to nature.
- We have prepared a matrix for the technologies to identify characteristics of the technologies.
- Near term decisions have already been made on some technologies.

Bill Freudenburg:

- Learn to live with human nature. There are certain unpredictabilities. But there are also predictables.
- Need to determine how DOE handles LTS institutional management. In other words, how the steward deals with others.
- Inside the organization, there is a need to integrate humans and the hardware. Someone is paying for this person. How do you keep an organization funded?
- The other aspect is how do we write this? Who is the audience? Who else should know about it? How much detail? Where do we put the detail?

David Borns:

- Basic core needs and capabilities.
- Information communication and management. How you gather data.
- How do you integrate in a total system to do performance verification?
  - How do you verify a containment system?
  - Sensors and monitoring system selection for needs.
- There is a lot of redundancy between the groups and we hope these disappear this week.
- What is the voice of the document and who is the voice of the customer? Who will be using these systems in 6-10 years.

Jim Mohatt:

- Who is our customer and how do we pose our literary stance?

- We are looking at 2006 and our short term plans.

- Our toolbox could be handed off to Rocky Flats and Fish and Wildlife, as well as local communities.

- Looking at legal aspects of LTS. What are the vital issues and nodes that need to be resolved? We need innovative technology here.

- We are melding with Dave's group on sensors and monitors.

- Also working with commercial industry on airborne hazards for communities at risk.

- Looking at industry wireless systems. Looking economic impacts. How do we do this with less?

- Archiving and intergenerational control issues. What data do we really need? Review data – will it have meaning 10 years from now? There is a lot of information that we could get rid of.

- As we attempt to rely on configuration management data, inevitably we find we cannot rely on that data. What is in the documentation does not always reflect reality. The manpower spent in accumulation – tradeoffs.

Discussion:

- This is not really a true roadmap of milestones and needs. We have technology lists. We should not be talking about technologies at this time. Should we be picking technologies at this stage?

- We are not specifically identifying technologies for each, but we are trying to identify those technologies that may fit into a sites needs.

- For LTS, there are questions of reparability and calibration. Harder to answer the robustness and longer-term answers of the technologies.

- We need to make a distinction in our roadmap from the near-term value that can be derived from the technologies to the longer-term issues, but this is different from the goal of the roadmap.

- Dollars and funding - we have a federal system of funding. The issue really is credibility of what it is you promise and the credibility to follow through.

- We have an obligation to layout our plan and put it in place and follow through. Take the programmatic approach. The one-year budget system needs to be approached differently.

- From DOD's perspective, LTS is a philosophy. We may not agree with DOE that it is program. It is a philosophy or a way of doing things. It is one agency that has an answer.

- However, from a stakeholder's viewpoint, it is a government responsibility.

Status Briefing on Roadmap

Bob Katt

Doug Hamelin reviewed the "Five Writing Situations" or elements:

- *Subject:* What we are writing about.
- *Purpose:* Why are we writing this
- *Thesis:* What we want to say; our main message.
- *Audience:* Who are we writing to? Primary audience and secondary audience?
- *Format/Organization:* How can we best present the information.

Discussion:

- What is our definition of our roadmap? Roadmaps are different depending upon needs and the customer.

- DOE is paying the bill for the roadmap but not the implications for the roadmap.
  - Do we even call this a roadmap?

- The vadose roadmap was dealing with science and was easily packaged.

- We have a philosophy and management issue that has science and technology components in LTS. We have logically identified these gray areas. Some of this is not hard science. This may not be a traditional roadmap. We have taken some of the requirements from the DOE sites for Thrust 1 and 2. Our customers have requirements for different definitions of what is long-term. We just need to define the territory. We need definition from the inter-agencies.

- We need to go back to our management and clarify this roadmap. Need higher order policy clarification. Top-down management agreement and clear policy requirements management direction. (See Action #1).

- Our planning position should concentrate on the S&T support from interagencies.

  - Who is the voice of the document?
    - Executive Committee will make the recommendations to DOE. They are the voice of the document.

  - We need to use the empirical method to add credibility. This needs to be fed back to the policy makers to provide good proven information. They need the information in order to make good decisions.

LTS Roadmap Early Draft Development – S&T Roadmap Team Consensus

Subject: *Long-Term Stewardship Science and Technology needs and recommended technology development pathways. (Consensus)*

Purpose: *Advocate Research and Development pathways to develop a system of capabilities so that DOE can develop integrated technology to inform policy and best manage investments to implement an effective LTS program. (Consensus)*

Purpose Discussion:

• Do we assume the capabilities are available when the sites enter LTS? Feedback to closure – policy issues – EC may want to deliver this message.
• Critical path (interlinks)
• An effective LTS Program has
  o Integration
  o Investing
  o Policy Decisions
  o Implementation
• Protection of environment and H&S.
• Reduce costs
• Pathways
• Assure/ensure capabilities
• Communicate message.
• DOE framework of DOE capabilities.
• Recommend priorities for current investment.
	• Technology vs technology pathway? What are we recommending? How do we develop these along the way? Is there room for both?
	• Roadmap was intended to be technology neutral (targets).
	• Be careful not to bias the roadmap to what is the current state by listing specific technologies.
	• Short-term focus on technologies and pathways that can help the sites today.
	• Long-term focus on pathways that can develop technologies for the future.
	• Value criteria needs to be included.
	• Who do we mean by DOE?
	• Need to provide a flexible framework for short and long-term. What is the time frame?
	• Validated framework is needed by 2006.

<u>Message:</u> *If you don't take our advice, it will cost you plenty – today and tomorrow.*

- *Environment*
- *Human impact (health and other)*
- *Money (taxpayer)*

(If accepted and implemented, these recommendations will provide the capability for the DOE to accomplish its LTS mission and better manage costs, risks, and the uncertainties at its LTS sites.)

<u>Audience:</u> *Decision Makers**

- *EM-1*

*Influencers**

- M&O
- LTS Steward
- S&T Community

Implementers

- Regulators
- Local community
- DOI
- Other Agencies

(Front-end of document)*

Audience Discussion:

• Audience is dynamic. • Primary - EM-1 and secondary – Inter-agencies. • Primary: Those responsible for remediation (design through the ROD) and those responsible for LTS. • Secondary – Interested stakeholders.	• The audience is those that make decisions, those that influence the decision makers, and those that implement the decisions. o Influencers – Stakeholders, others, agencies. o Implementers – DOE, Contractors. • There could be conflicts between EM-1 and interagencies. May need conflict resolution between primary and secondary.

Lunch Speaker

Bob Wilson, Department of Interior

- Key areas for success with the Department of Interior:
  - Communication (no surprises)
  - Involvement early on.
  - Develop systems that work with nature.
  - Remember, others will have to live with your solutions.

- Cleanup is only a small part of the function of DOT.

- LTS fits in well with DOT's concept, but DOT has a different definition.
  - DOT does not accept land with the idea of closure and transferring the property.
  - DOT may change the management of the land depending upon environmental (and other) changes.
  - DOT looks how to improve their ability to deal with the stakeholders.

- DOT deals with two differences in property management.
  - Those properties managed with Central Haz Mat funds (the resources we have and have to deal with).
  - Sites the DOT wants to pursue or sites that "others" want to give the DOT.

- Need to cleanup and preserve these sites appropriately.
  - Site clean up is engineered driven, but they need input to be effective.

- Choices in property transfers – leaving the resource with DOE may be the best. The resource may be too extreme (or contaminated) to transfer anywhere else.

- DOI may not have the funding or the program expertise to del with cleanup issues.
  - Property usually comes to us in good shape.
  - Worst-case areas stay with DOE.
  - DOI does not typically assume management of contaminated property.

- Central Haz Mat Fund does not provide the funding for cleanup activities, even if the resource/property is transferred to DOI.

- DOI will gladly work with DOE anytime.

- DOI "protects" and "conserves," but they do not focus on cleanup.

- DOI is a National Resource Trustee."
  - DOE is also a trustee that needs to manage their resources and not abuse the transfer of resource as the solution to their problems.

- Remember that the "cost" of something is more than just monetary.

- Also remember, there is no single solution and several distinct approaches may be needed.

- DOE needs to keep in mind their goals (what are they going to do with the land).

- A benefit of LTS is leading to effective communication between DOE and DOI.

Q. DOE has to deal with landfill issues and that fits in well with LTS. Do you think DOE will buy-in to leaving waste or contaminated material in the ground?

A. Can't speak for DOI, but this is an opportunity for DOI to work with DOE on the solutions. This is a policy call.

Q. Why wouldn't DOI manage the historical aspects of our sites?

A. There is a difference in protection of land versus cleanup. We manage the trees at "The Mall" in Washington D.C. by horticulture experts. But we don't have the expertise to effectively manage nuclear waste contamination. This involves long-term needs and dangers.

Q. What about tribal concerns of returning the land in the original state to the tribes?

A. This is an integration of programs issue and determined on a case-by-case basis.

Draft Wall Chart Review

Brent Dixon

Q: Are you evaluating how DOE looks at the tasks?

A: DOE has changed its Gate Model. The reason for doing this color-coding is to identify the places to synchronize between them. Integrate pathways together. Colors help to identify commonalities.

Q: You are talking about imposing harmony on something that is really ~24 different things. If there are ~3 that are basically the same, can we merge them?

Q: It is hard to show that these things are converging. Show synergism. This does not show that and we are not sure it can. Do we show that things are coming together?

A. We will actually describe the outcome on the chart. Show where they come together.

- Suggestion: Can you put the targets at the end of the timeline pathway?

- There is an integration that needs to be done at the activity and capability level.

- Comment: It may be logical to have 3-6 functional groupings that will eventually lead to showing the building blocks and infrastructure.

- We should not force integration with one pathway in this roadmap. This is a system of pathways.

Discussion:

- LTS Roadmap Ideas
  1. Use technology, (e.g., HTML) either CD ROM or Website to enhance information.
     - Single view
     - Comment field to populate access database for feedback.
  2. Describe outcomes, i.e., dollar savings on chart?
  3. Add targets to end of pathway.
  4. 3-6 groupings of similar functions (Functional groups)
  5. Include feedback loops on timeline.

Day Two – May 14, 2002

Update from Workgroup Breakout Session

Jim Clark

- Reviewed the roadmap for common areas.
- Page 23 of the write-up, Section 2.3. Bob Katt did a good job of capturing the essence.
- We will map what we have into these five areas.

Q. Did you discuss linkage of these ideas into an integrated system?
A. This is what we would like to do today – develop a matrix and map the section numbers with new headings.

Q. Try not to force integration where it does not apply. It still can be a system without being linked together.
A. We will not force the links, but we want to address the redundancy issue. Make a more cogent description of what is going on?

Q. How do these five areas map into what the department has committed to do the initial study draft? Quality check on the topical areas. Concern is that we are not following the initial documentation on LTS.
A. The technology part is pretty general. These categories are a natural fall out. There are a bunch of LTS reports out there and we just need to produce a document that can stand on its own, but a review of the other themes would be valuable.

- The four things we need to do in LTS are contain, monitor, manage, and communicate (C^2M^2) or $(MC)^2$.

- This fits into the systems engineering approach.

Review of Meeting to Develop Motivators for the Audience of the Roadmap

Larry Davis

- Brainstormed the hot buttons or motivators of the audience (decision makers, influencers, implementers).

- There needs to be some screening of this list to develop a cogent message.

- There is some disagreement on who writes the Introduction. Should the BOD write the Introduction or should the Working Groups with BOD review?
  - Response from group: The working groups are not full time employees of this project and the board is supposed to give the vision. It is a one sided exchange to have the working groups write with critique by the board. It would seem better to have the document written together.

- When does this report have to be done? We need a flexible and fixed calendar from the BOD.
  - Others materials done within the month of June.
  - Ch 2&3 should be done in May 31. Working Group.

- May 31, Set of consolidated recommendations. Summary of capabilities that we think are necessary and supporting information. Negotiated with G. Boyd and Em-51 at the beginning of this effort to provide the input to the EM-51 S&T budget. The format is not set.
  - What about giving them the heavy hitters (capabilities) with some supporting text.

- Capability targets and rationale would provide the information needed. The capabilities have now have been scrubbed and down selected.

Roadmap Development Schedule (5/15/02: 10:12 A.M.)

Target Date	Deliverable	Responsibility
May 31, 2002 – (milestone)	Submit draft recommendations to DOE-ID based on results from Denver Workshop. (High-level summary of Ch. 2. Capabilities and supporting text.)	Bruce Hallbert
May 31, 2002 – (milestone)	Submit draft recommendations as a "Preview" of what they can expect to EPA, NRC, & ?.	Jeff Short
May 15 - June 15, 2002 (activity)	Complete writing of First draft of LTS Roadmap.	Document Manager – Kowall. Head writer – Bob Katt.
June 15-30, 2002 (activity)	Edit and distribute LTS Roadmap to Executive Committee for a collective review and edit of the draft.	Document Manager – Kowall. Head writer – Bob Katt.
July 1-15, 2002 (activity)	Complete review, critique, & edit of Draft LTS Roadmap.	Executive Committee
July 15-30 (activity)	Incorporate comments from Executive Committee	Kowall/Katt
August 1-15 (activity)	Complete final draft review and publication.	Bruce Hallbert
August 15, 2002 (milestone)	Submit to DOE-ID for Internal Programmatic Review (minor comments)	Bruce Hallbert
August 23, 2002 (milestone)	Return comments to Bruce Hallbert	DOE-ID

August 23-29, 2002 - (activity)	Incorporate comments from DOE	Kowall/Katt
August 29, 2002 – (milestone)	Final Draft to DOE-ID for Review	Kevin Kostelnik
July 23-24, 2002 (tentative)	Executive Committee Meeting	Bruce Hallbert

Key Points for Chapter 4

(Include or not to include)

Include?	#	Key Point
Yes	1	What about schedule and funding?
Yes?	2	Sequencing • This will/may be difficult. • BBWI is deliverer • Legal ramifications need to be considered. • Consider FACA.
No	3	Critical paths (summary level of some sort).
Yes	4	Crosswalk with Jim Owendoff's document on closure. To what extent? Thrust 1&2 tie (Kevin Kostelnik write-up)
Yes	5	Document (paper) and HTML links of some sort.

Sequencing Process

- The body of the document includes unconstrained version from WG Chair Person and here is how it links to the real world (Thrust 1 & 2 and Jim Owendoff's concerns).

- Executive committee identifies framework for sequence.
  1. Thrust 1: Critical S&T for closure (2006)
  2. Thrust 2: LTS S&T needed to have step changes for future closures.
  3. LTS S&T where we can get greatest level of cost, risk, or uncertainty reduction.
  4. S&T needed to complete whole "system."

Key Points for Chapter 5 – Conclusion

Shah Choudhury

1. We can continue with the LTS with our current level of technology, however if we are to have stated benefits. all aspects of the system must be done.

2. Step change is needed.

3. This is a "System" (not parts or part).
   Optimum set of tools
   - This includes the non-technical human elements.

4. There are many stakeholders. They are integral to the system.

5. S&T will have minimal impact on technologies for 2006 closure. Impact comes from how stakeholders view that there is an LTS program.
    - What impact can/will it have?
    - "State of art" to "state of practice."
    - Rocky Flats perspectives – 2006 closures.

LTS Roadmap Format Discussion

- Chapter One – Introduction
  - Bob Katt - Lead

- Chapter 2 – Capabilities
  - Working Group Chairs – Leads
  - Themes (cross cutting and other)
  - Capabilities and targets
  - Current Chapter 2 "repackaged"

- Chapter 3 – Pathways
  - Working Group Chairs

- Chapter 4 – Sequencing
  - BOD/Kevin Kostelnik - Leads

- Chapter 5 – Conclusion
  - Bob Katt - Lead

Meeting Wrap-up

As each chapter is reasonably ready, send to Doug Hamelin to send out for review with the message that "This is for your review, return comments on Chapter 1-5 to Doug Hamelin"

Status: Half of the initial draft is in text and the remaining half is in outline form.
Actions: Bob Katt will send draft Chapter 1 to the BOD by 5/31/02 and draft Chapters 1-5 at the end of June (WG Chairs are working on Chapters 2 & 3).

Chapter 4: Kevin Kostelnik

Actions: Kevin will send a "shell" of Chapter 4 with the proposed process method and criteria to the BOD by 5/31/02.

Chapter 5: Bob Katt

Actions: Bob will send a preliminary draft of Chapters 1-5 to the BOD by 6-30-02.

Next Executive Committee Meeting

Tentative Date: July 23-24 (travel on July 22).

Tentative Flow:

- Day 1: Resolve Chapter 4
- Day 2: Scrub Chapters 1-5